120. A Perisphinctoid Ammonite, an Ally of Paraboliceras, Found in the Torinosu Series of Zusahara, Sôma-gun, in the Abukuma Mountainland.

By Hisakatsu YABE, M.I.A.

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The Torinosu series is feebly developed in the Sôma district, Iwaki Province, forming the eastern border of the northern part of the Abukuma Mountainland; it consists of sandstone, shale, and limestone, the last mentioned which is usually coralline, bearing the name Torinosu limestone from its lithological and palaeontological similarity to those of the Kwantô Mountainland and the Outer Zone of South-west Japan.

In the Sôma district, the Torinosu series is developed in intimate combination with an older, Middle Jurassic complex containing *Trigonia* cf. *formosa* Lycett[1], and a younger, presumably Lower Cretaceous, one containing *Nilssonia schaumburgensis* Dunker and many other plant fossils[2]; altogether they occupy a narrow belt extending for more than 25 km N-S, and at most 3 km broad E-W. The western side of this Mesozoic belt is bordered by a fault and its eastern side by another, which last is overlapped by a Miocene and later deposits. In the southern and middle parts of this belt, a bed of Torinosu limestone lies near its eastern border, as may be seen midway on the E-W road from Koike to Zusahara, where the limestone and associated rocks incline eastward in a moderate angle, while in the middle part only, there is, besides, one more bed of the limestone close and parallel to the former; whether these two limestone beds are not mere tectonic duplication of one and the same bed is still unsettled. The same limestone, on the other hand, also occurs for a short distance in the middle and northern parts, very close to the western border of the Mesozoic belt. Mr. J. Iwai found a number of fossils in the limestone of Koike and a calcareous rock lying immediately beneath it. Among these fossils are a few remains of ammonites which, though not well preserved, are still good enough for generic determination; these have already been reported by the late Dr. S. Shimizu[3] under the names,

Perisphinctes (*Aulacosphinctes*) cf. *steigeri* Shimizu
Perisphinctes (*Virgatosphinctes*) sp.
Streblites sp.

1) H. Yabe and R. Aoki: Mesozoic and Cenozoic History of the Abukuma Plateau and Its Foreland along the Pacific Coast. Jap. Jour. Geol. Geogr., III, (3-4), 1924.

2) S. Oishi: The Mesozoic Floras of Japan. Jour. Fac. Sci., Hokkaidô Imperial University, Ser. IV, Vol. V (2-4), 1940.

3) S. Shimizu: A Tithonian Species of *Perisphinctes* from the Torinosu Limestone of Koike, Province of Iwaki. Jap. Jour. Geol. Geogr., V, 1927. Note on Two Tithonian Species of *Perisphinctes* from the Torinosu Limestone of Koike, Province of Iwaki. Ibid., VII, 1930. Note on a Species of the Tithonian Genus *Streblites* from the Torinosu Limestone of Koike. Ibid., IX, 1931. Also see H. Yabe and S. Sato: A New Bivalve from the Jurassic Torinosu Series of the Abukuma Mountainland. Proc. **18** (1942), 251.

What is worthy of note is that all these ammonites belong to types characterising the Spiti shales of the Himalayas. To this list we can now add another, namely

Perisphinctes (*Paraboliceras?*) *japonicus*, sp. nov.

found impressed on a dark coloured shale, the specimen being labeled "Loc.: Zusahara", apparently in the handwriting of Shimizu, who probably collected it somewhere near the village. This find is another support to the view that the Torinosu series of the Sôma district is Upper Jurassic and that its ammonite-faunule is intimately related to the Spiti shales fauna, in which the ammonites of the subgenus or genus *Paraboliceras* are abundantly represented.

Perisphinctes (*Paraboliceras?*) *japonicus*, sp. nov.

Fig. 1.

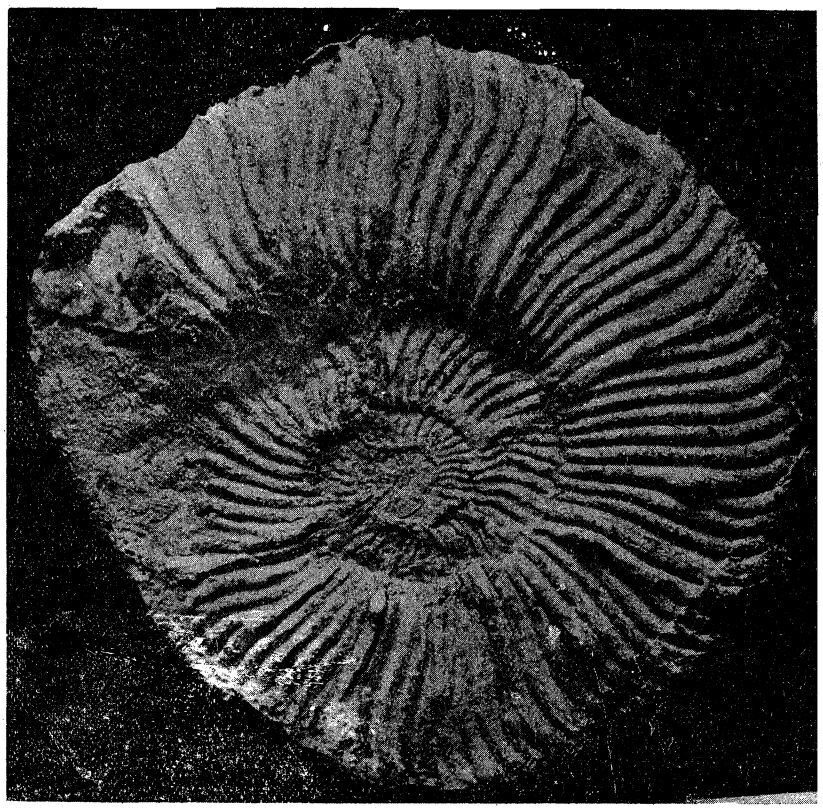

Fig. 1.

Perisphinctes (*Paraboliceras?*) *japonicus*, sp. nov. Nat. size.

An outer cast was examined.

Shell thin discoidal, with broad umbilicus and narrow venter, which is sunken medially.

Dimensions (mm.)

Diameter	105
Height of last whorl	40
Breadth of last whorl	ca. 10
Breadth of umbilicus	40

Whorls gradually increasing in height, with nearly flat flanks, and umbilicus as broad as height of last whorl. Flanks provided with numerous prominent ribs which are separated by equal intervals. Ribs gradually thickening toward ventral border, somewhat flexuous, turning slightly backwards on the ventral one-third of the flank, and then abruptly forward on ventral border. Of 45 ribs on the last whorl, 7 are thicker than the remainder, marking the periodic arrest of growth and cutting obliquely 1 or 2 ribs behind them; number of ribs between two succeeding periodic ones rather variable, being 3–6. Periodic ribs tuberculated near ventral and umbilical borders, and occasionally also at their middle; tubercles rather prominent, often growing almost to spines. Suture-lines unknown.

Remarks: The present fossil, which is evidently a perisphinctoid, is characterized (1) by almost lacking interstitial ribs, almost all the ribs except those that are cut obliquely by the periodic ones, extending from the ventral border to the umbilical, and (2) by having the median row of tubercles. It probably belongs to *Paraboliceras* hitherto believed to be restricted to the Spiti shales, or to represent a form very near it, seeing that it approaches most such species of the subgenus as *P. pompeckji* Uhlig and *P. sabinianus* Oppel from the Spiti shales, so elaborately described by V. Uhlig in his well known work "The Fauna of the Spiti Shales".[1] There is, however, no median row of tubercles in the two species mentioned above, nor in any of other species known of *Paraboliceras*.

Stored in the Institute of Geology and Palaeontology, Tôhoku Imperial University; Reg. No. 65276.

Locality: Zusahara, Sôma-gun, Iwaki province (Hukusima prefecture).

Geological age: Upper Jurassic, Tithonian.

1) Pal. Indica, Ser. XV, Himalayan Fossils, Vol. IV (2), 1910.